CHAPTER 7

MITIGATION DECISION ANALYSIS

7-1. Policy. Care must be taken to preserve and protect environmental resources, including unique and important ecological, aesthetic, and cultural values. The Fish and Wildlife Coordination Act of 1958 (Public Law 85-624, 16 U.S. C. 61 et seq.) requires fish and wildlife mitigation measures when appropriate and justified. The National Historic Preservation Act of 1966 (Public Law 89-665, as amended, 16 U.S.C. 470 et seq.) does the same for cultural resources. The Water Resources Development Act of 1986 (Public Law 99-662) and implementing guidance provide further policy on fish and wildlife mitigation, including cost-sharing provisions. Specific Corps mitigation policy on fish and wildlife and historic and archaeological resources is included in 1105-2-100.

7-2. Definitions.

a. Mitigation. The Council on Environmental Quality (CEQ), in its Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1508.20), published a definition of mitigation that has been adopted by the Corps (ER 1105-2-100) and includes: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during life of the action; and compensating for the impact by replacing or providing substitute resources or environments. These will be referred to as the five elements of mitigation.

b. Significant Resources and Effects. Significance includes meanings of context and intensity. Context refers to the degree of technical, institutional, and/or public recognition accorded to a resource at local, regional, or national levels. Intensity refers to the severity of impacts as measured in duration, location, and magnitude of effects. The criteria for determining the significance of environmental resources and effects are provided in ER 1105-2-100. Significance of historic resources is further defined as a property listed in or determined to be eligible for listing in the National Register of Historic Places (ER 1105-2-100, Chapter 7).

7-3. Key Concepts for Mitigation.

a. General.

(1) Significant resources are to be identified and specifically considered in all phases of a project. If significant losses to those

resources will occur because of the project or action, then appropriate consideration of mitigation for those losses must be accomplished. For fish and wildlife losses, consideration of mitigation must be given to any losses which are not negligible losses. The extent of mitigation recommended should be that which is determine to be justified.

(2) Mitigation consists of avoiding, minimizing, rectifying, reducing, or compensating for the impacts. The five elements of mitigation are logically stepwise, i.e ., it is better, easier, and often cheaper to avoid an impact than to compensate for it. The elements are iterative in that the results from one step may require reexamination of previous actions. The first elements of mitigation can often be accomplished through the use of good engineering practices, e.g., changes in project design.

(3) Impacts resulting from flood control measures that involve dredged material disposal and hydraulic changes are largely to wetlands, vegetated shallows, stream bottoms, and riparian zones. Chapter 2 of this manual and ER 1105-2-100, Chapter 7 discuss potential impacts on these resources.

b. Early and Continuous Coordination and Public Involvement. Planning for mitigation must occur concurrently with overall project planning activities and with the involvement of personnel from all appropriate state and Federal agencies (ER 1105-2-100). An integrated planning effort ensures that the significant resources are correctly identified, significant impacts are determined, all the elements of mitigation are considered, and the mitigation actions taken or recommended are the best possible.

c. Monetary and Nonmonetary Concerns. Both monetary and nonmonetary aspects of significant resources and effects will be considered. Monetary aspects are quantified using dollars, and nonmonetary aspects are quantified using a variety of appropriate measures such as Habitat Units, acres, population data, Visual Impact Assessment Units, parts per million, or use-days.

d. Mitigation Objectives. Mitigation objectives should be stated as a quantification of the amount of compensation required for significant losses to significant resources. Both the identity and character of the significant resources and the amount of losses to them should be clearly documented.

e. Incremental Cost Analysis. Incremental or marginal cost analysis is a process used in designing a compensation plan that meets the mitigation objectivities. It investigates and characterizes how the cost of a unit of output increases as the level of output changes, e.g., charge in dollars per Habitat Unit with increasing Habitat Units. An analysis will result in an array of implementable mitigation actions, ranked from most to lease cost effective. A mitigation measure such as fencing a greenbelt to exclude grazing or placement of a spawning channel becomes an increment when it is combined

with other measures into a plan and analyzed to determine the most cost-effective solution.

f. Justification for Mitigation. Justification for fish and wildlife mitigation or any environmental enhancement will be accomplished by determining that each measure or separable increment will have monetary and non-monetary benefits/values that equal or exceed the monetary and non-monetary costs. Such justification will be presented when the mitigation or enhancement proposals are recommended for approval. ER 1105-2-100 Chapter 7 provides requirements for fish and wildlife mitigation and enhancement.

7-4. Examples.

Many of the design items in Chapter 4 of this manual are suitable approaches to one or more of the mitigation elements. Examples of each of the elements are listed below:

a. Avoid - preserve a public access point; redesign channel around critical habitat or archeological site.

b. Minimize - perform single-bank channel modification; use less riprap and more vegetation for channel side slope protection.

c. Rectify - recontour and revegetate disturbed areas; restore flow to former wetlands.

d. Reduce - control erosion; place restrictions on movements of construction and maintenance personnel and equipment.

e. Compensate - develop a greenbelt habitat using dredged material; recreate a spawning channel.